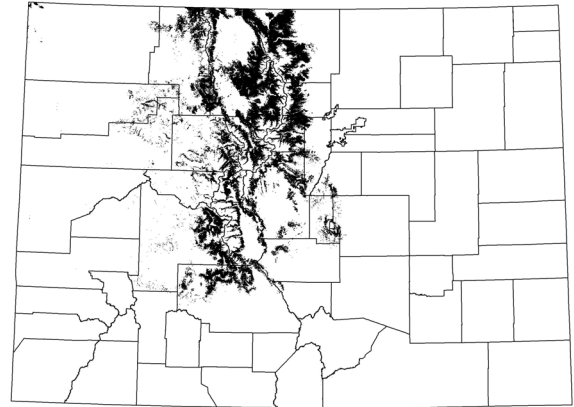


ROCKY MOUNTAIN LODGEPOLE PINE FOREST



R. Rondeau



extent exaggerated for display

PINUS CONTORTA FOREST ALLIANCE

Pinus contorta / *Arctostaphylos uva-ursi* Forest

Pinus contorta / *Carex geyeri* Forest

Pinus contorta / *Carex rossii* Forest

Pinus contorta / *Shepherdia canadensis* Forest

Pinus contorta / *Vaccinium scoparium* Forest

PINUS CONTORTA WOODLAND ALLIANCE

Pinus contorta / *Juniperus communis* Woodland

Overview: This matrix forming system is widespread in upper montane to subalpine elevations of the Rocky Mountains, Intermountain region, and north into the Canadian Rockies. These are subalpine forests where the dominance of *Pinus contorta* is related to fire history and topo-edaphic conditions. Most forests in this ecological system are early to mid-successional forests which developed following fires. Following stand-replacing fires, *Pinus contorta* will rapidly colonize and develop into dense, even-aged stands. This system consists of extensive stands of pure lodgepole pine or, to a lesser extent, stands in association with other conifer species.

Characteristic species: These forests are dominated by *Pinus contorta* with shrub, grass, or barren understories. Sometimes there are intermingled mixed conifer/*Populus tremuloides* stands with the latter occurring with inclusions of deeper, typically fine-textured soils. The shrub stratum may be conspicuous to absent; common species include *Arctostaphylos uva-ursi*, *Ceanothus velutinus*, *Linnaea borealis*, *Mahonia repens*, *Purshia tridentata*, *Spiraea betulifolia*, *Spiraea douglasii*, *Shepherdia canadensis*, *Vaccinium caespitosum*, *Vaccinium scoparium*, *Vaccinium myrtillus*, *Symphoricarpos albus*, and *Ribes* spp. Shrub and herbaceous layers are often poorly developed in lodgepole pine forests, and plant species diversity is low. This low understory diversity is probably related to the single age class and dense canopy of many stands.

Environment: Soils supporting these forests are typically well-drained, gravelly, have coarse textures, are acidic, and rarely formed from calcareous parent materials. In Colorado, lodgepole pine forests generally occur between 8,000-10,000 feet on gentle to steep slopes on all aspects.

Dynamics: *Pinus contorta* is an aggressively colonizing, shade-intolerant conifer which usually occurs in lower subalpine forests in the major ranges of the western United States. Establishment is episodic and linked to stand-replacing disturbances, primarily fire. The frequency of natural fires in Rocky Mountain lodgepole pine stands ranges from a few years to 200 or more years (Davis et al. 1980). Low to moderate severity surface fires are likely to have a return interval on the order of a few decades, while stand-replacing fires are generally less frequent (Crane 1982).

Variation: The incidence of serotinous cones varies within and between varieties of *Pinus contorta*, being most prevalent in Rocky Mountain populations. Closed, serotinous cones appear to be strongly favored by fire, and allow rapid colonization of fire-cleared substrates (Burns and Honkala 1990). Hoffman and Alexander (1980, 1983) report that in stands where *Pinus contorta* exhibits a multi-aged population structure, with regeneration occurring, there is typically a higher proportion of trees bearing nonserotinous cones.

Some *Pinus contorta* forests will persist on sites that are too extreme for other conifers to establish. These include excessively well-drained pumice deposits, glacial till and alluvium on valley floors where there is cold air accumulation, warm and droughty shallow soils over fractured quartzite bedrock, and shallow moisture-deficient soils with a significant component of volcanic ash.

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Davis, Kathleen M.; Clayton, Bruce D.; Fischer, William C. 1980. *Fire ecology of Lolo National Forest habitat types*. INT-79. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station. 77 p.

Hoffman, G. R., and R. R. Alexander. 1980. *Forest vegetation of the Routt National Forest in northwestern Colorado: A habitat type classification*. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station. General Technical Report RM-221. Fort Collins, CO. 41 pp.

Hoffman, G. R., and R. R. Alexander. 1983. *Forest vegetation of the White River National Forest in western Colorado: A habitat type classification*. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station. Research Paper RM-249. Fort Collins, CO. 36 pp.



N. Lederer

Rank:	A	B	C	D
① SIZE				
Acres	>90,000	50,000-90,000	30,000-50,000	< 30,000
② CONDITION				
Community structure	A mature stand of lodgepole pine consists of approximately 10 trees per acre with a minimum DBH of 10 inches and the minimum age of approximately 150 years. Usually this is an even aged stand with approx. 2 dead standing trees per acre with a minimum DBH of 8 inches. "Dog-hair" stands due to natural fires may be included.	Majority of stand is > 100 years old and may show evidence of selective logging that has altered the structure	Stands regenerated naturally after fire, logging, or young to mature stands with significant history of selective logging disturbance that altered composition or structure.	Stands of lodgepole pine with very low species diversity that are due to human disturbance or fire suppression.
Non-native spp.	Absent or rare.	May be present with low to moderate frequency in the understory, but have low total cover.	Uncommon to frequent, but do not dominate or co-dominate understory (<10-20% cover).	May be dominant.
Disturbance	Fragmentation due to roads, logging, mining, or other human development is limited to less than 1% of the occurrence.	Fragmentation due to roads, logging, mining, or other human development is limited to less than 3% of the occurrence.	Fragmentation due to roads, logging, mining, or other human development is limited to less than 5% of the occurrence.	More than 5% of the occurrence is fragmented due to roads, recent logging, mining, or other human development.
③ LANDSCAPE CONTEXT				
Surrounding land	Occurrence surrounded by a large area (>2000 ac/800 ha) of natural vegetation. Few small roads in the surrounding landscape.	Landscape composed of at least 80% natural or semi-natural vegetation; or landscape has very little development or agriculture but has major components of non-native vegetation in at least one physiognomic layer or is composed primarily of tree plantations.	Landscape is a mosaic of agricultural or semi-developed areas and natural or semi-natural vegetation, the latter composing 25-80% of the landscape, or landscape is dominated by very young tree plantations (cut within last 20 years).	Occurrence surrounded primarily by urban or agricultural landscape, with <25% landscape cover of natural or semi-natural vegetation.
Landscape-scale processes	Fires are able to occur at natural frequency and intensity.	Frequencies and intensities of fires are within natural range.	Frequencies and intensities of fires may be out of natural range, but are easily restorable.	Frequencies and intensities of fires are out of natural range and not restorable.